

HOST PLANTS, DISTRIBUTION AND ABUNDANCE OF THRIPS (*THYSANOPTERA*) OF BOMBAY STATE¹

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In the Bombay State, the natural order Thysanoptera has not been studied previously and from the survey of the scattered published and unpublished reports it had become abundantly clear that a large scope existed in studying the distribution and abundance of thrips fauna in this State. Further, in the past, though several persons have worked on the systematics of Thysanoptera in the Indian sub-continent, little information has been published as to the host range of the species so far described. Hence an attempt was made to survey the Bombay State with a view to collect and identify the species prevalent in this area, and record their hosts, the plant part ordinarily infested, the intensity of abundance and the period of the year when the insect can be found.

During 1950 and 1951 insects were collected from the following localities: Viramgam, Detroj, Pavaghadh, Baroda, Anand and Surat, in Gujarat; Bombay suburbs; Khandala, Lonavala, Poona and its surroundings in Deccan.

From a survey, lasting over two years, it is estimated that a total of nearly 70 species of the suborders Terebrantia and Tubulifera are in our collection. Out of these so far we have been able to positively identify 17 species of the suborder Terebrantia. The remaining are under study and the information pertaining to them will form the matter for a subsequent communication. The identified species are the following:—

Suborder TEREBRANTIA Haliday

Family Aeolothripidae Uzel.

1. *Aeolothrips fasciatus* Linn.

Family Heliothripidae Shumsher.

Subfamily—Heliothripinae Karny.

2. *Hercothrips indicus* Bagnall.
3. *Rhipiphorothrips cruentatus* Hood.
4. *Tryphactothrips rutherfordi* Bagnall.

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Family Thripidae Uzel.

Subfamily—Chirothripinae Karny.

5. *Chirothrips manicatus* Haliday.
6. *Neocryothrips* (*Ramakrishnothrips*) *jonnaphila* Ramakrishna.

Subfamily—Thripinae Karny.

7. *Achaetothrips mundus* Karny.
8. *Anaphothrips flavicinctus* Karny.
9. *Anaphothrips* (*Dantabahuthrips*) *sacchari* Shumsher.
10. *Anaphothrips* (*Scirtothrips*) *dorsalis* Hood.
11. *Ayyaria chaetophora* Karny.
12. *Frankliniella sulphurea* Schmutz.
13. *Microcephalothrips brevipalpis* Karny.
14. *Scolothrips asura* Ramakrishna and Margabandhu.
15. *Scolothrips sexmaculatus* Pergande.
16. *Thrips* (*Isothrips*) *orientalis* Bagnall.
17. *Thrips tabaci* Lindeman.

While collecting these species, notes were made as to the locality, hosts, part of the plant infested and the abundance. This information along with the relevant information published by earlier workers is put together and given below.

Suborder TEREBRANTIA

Family Aeolothripidae

1. *Aeolothrips fasciatus* Linn. (1761)

The existing information pertaining to the hosts, parts of plants infested and the locality are tabulated below:—

Family of host plant	Host species	Plant part infested	Locality	Period of collection	Reference
Anacardiaceae	<i>Mangifera indica</i>	Flowers	Pusa	1910	Bagnall (1919)
Compositae ...	<i>Carthamus tinctorius</i>	„	Delhi	1910	Hood (1919)
Cruciferae ...	<i>Brassica campestris</i> var. <i>dicholom</i>	„	„	—	Shumsher (1949)
	„ „	„	„		„
	var. <i>sarson</i>	„	„		„
Graminae ...	<i>Saccharum officinarum</i>	—	„	1910	Ramk. & Marg. (1913)
Leguminosae	<i>Lahyrus odoratus</i>	Flowers	„		Shumsher (1949)
	<i>L. sativus</i>	„	„	1910	„
	<i>Medicago sativa</i>	Leaves	„	1910	„

Several examples of this species were collected at Poona in January 1951 on leaves and leaf sheaths of *S. officinarum* (Gramineae) and a few examples on flowers of *Allium cepa* (Liliaceae). The intensity of infestation was mild on the former host plant whereas it was insignificant on the latter.

Family Heliothripidae.

Subfamily—Heliothripinae.

2. *Hercothrips indicus* Bagnall (1913).

Information regarding the range of host plants, the plant part infested and the distribution recorded in India is given below:—

Family of host plant	Host species	Plant part infested	Locality	Period of collection	Reference
Araceae ...	<i>Colocasia</i> sp.	—	N. Circars	—	Ramk. (1928)
Cruciferae	<i>Brassica oleracea</i>	—	Bombay	—	„ „
Leguminosae	<i>Arachis hypogaea</i>	Flowers	S. Arcot	—	„ „
	<i>Crotolaria juncea</i>		Pusa	—	„ „
Palmaceae ...	Date palm	—	Sirguppa	—	„ „
Solanaceae...	<i>Solanum melon gena</i>	—	Surat	—	„ „
	<i>S. tuberosum</i>	—	Bombay	—	„ „

This species has been found on the leaves of *Gynandropsis gynandra* (Capparidaceae) in a mild form at Anand in January 1950. Similar infestation has been also noticed on leaves and flowers of *Dianthus plumeri* (Caryophyllaceae) in the month of March 1951 at Poona while moderately heavy infestation on the leaves and stems of *Carthamus tinctorius* (Compositae) have been seen mildly infested in September and February 1950 at Poona. The flowers of *Antirrhinum* sp. (Scrophulariaceae) had mild infestation in January 1951 in the same localities.

In addition to brinjal and potato reported by Ramakrishna (1928) this species has been found to infest mildly the leaves of tomatoes (*Lycopersicon esculentum*, Solanaceae) in the month of October 1950 near Anand, while at Poona the species has been observed infesting potato crop in February 1951.

The other host plants of the species are *Foeniculum vulgare* (Umbelliferae) and *Cannabis sativa* (Moraceae). Mild infestation on the leaves and stems of the former has been observed at Anand in October 1950, while the infestation on leaves and stems of the latter was moderately heavy in December 1950 at Poona.

As the species causes considerable damage to cultivated plants, it is one of the agriculturally important species. It is however interesting to note that though this species is a serious pest on cotton in Sudan (Corbett 1920) the earlier (Ramk. 1932) and present observations for 1950 and 1951 in many localities have curiously shown that it was neither present on cotton nor on any plant of the family Malvaceae to which cotton belongs. But just recently in September-October 1952, we have recorded this insect as a pest on cotton and *F. vulgare*, causing severe damage at Viramgam, and in other N. Gujarat districts.

3. *Rhipiphorothrips cruentatus* Hood (1919).

This insect is also of considerable agricultural importance, as a large number of economic host plants have been found to be infested. Ramakrishna Ayyar (1928) has described the injury caused by this insect on grapes. The existing information as to its host, range, etc., is given below:—

Family of host plant	Host species	Plant part infested	Locality	Period of collection	Reference
Anacardiaceae ...	<i>Mangifera indica</i>	Leaves	Lyallpur	—	Ramk. & Marg. (1939)
	" "	Flowers	Coimbatore	1924	Karny (1925)
Combretaceae ...	<i>Terminalia arjuna</i>	Leaves	Lyallpur	—	Ramk. & Marg. (1939)
Mimoseae ...	<i>Prosopis spicigera</i>	"	Maddur	1928	Karny (1925)
	" "	"	Bangalore	—	Ramk. (1928)
	" "	"	Lyallpur	—	Ramk. & Marg. (1939)
Myrtaceae ...	<i>Eugenia</i> sp.	"	Coimbatore	1924	Ramk. (1928)
Punicaceae ...	<i>Punica granatum</i>	"	Lyallpur	—	Ramk. & Marg. (1939)
Rosaceae ...	<i>Rosa</i> sp.	"	Coimbatore	—	Karny (1928)
	" "	"	Palur	—	Karny (1928)
Vitaceae ...	<i>Vitis vinifera</i>	"	Coimbatore	1923	Karny (1923)
	" "	"	Bezwada	—	Ramk. (1928)
	" "	"	Madura	—	Ramk. & Marg. (1931)
	" "	"	Travancore	—	Ramk. & Marg. (1931)

In addition to *T. arjuna* reported earlier (Ramk. and Marg, 1939), this species has been found to infest mildly the leaves of *T. catappa* in August 1951 at Anand.

In the family Myrtaceae and Punicaceae *Psidium gujava* and *Punica granatum* have also been found to be infested in the Poona region. The infestation of the former has been mild in September 1951 while the species is present in insignificant numbers on the leaves of the latter. The mild infestation on the leaves of *Rosa* sp. has again been observed in August 1950 the month in which the specimens were also collected in 1923 at Coimbatore (Karny 1925).

The species has greater economic importance as a pest on grape vine (*V. vinifera*). In the Bombay State it is particularly abundant in Nasik, whereas, moderate damage on the leaves has also been observed on this host in September 1951 in Poona.

4. *Trypactothrips rutherfordi* Bagnall (1915).

So far this species has only been collected from the leaves of *Gossypium herbaceum* (Malvaceae) at Coimbatore (Ramk. 1928) and from the flowers of *Datura* sp. (Solanaceae) at S. Arcot (Pergande 1894).

From the collection made by us it is observed that the species has a wide host range. It has been found to infest mildly the leaves of *Calotropis* sp. (Asclepiadaceae) and *Acalypha* sp. (Euphorbiaceae) in the month of July 1950 at Poona. Mild infestation on the leaves of *Morus indica* (Moraceae) has been observed in September 1950 in the same locality. Further the leaves of *Santalum album* (Santalaceae) and *Sapindus trifoliatus* (Sapindaceae) have been observed to have few specimens of the species in January 1950 and October 1950 respectively at Baroda.

Family T h r i p i d a e.

Subfamily—Chirothripinae.

5. *Chirothrips manicatus* Haliday (1836).

The species has only been reported on *Nicotiana tabacum* from Coimbatore (Ramk. and Marg. 1931). In the Bombay State however few insects have been obtained from sweeping from grasses in April and August 1951 at Poona, and in December 1951 at Detroj.

6. *Neocorynothrips* (*Ramakrishnothrips*) *jonnaphila* Ramk. (1928).

The species has been observed on the flowers of *Brassica campestris* var. *sarson* (Cruciferae) at Delhi (Shumsher 1949). It is also common on the members of the family Graminae. It has been observed on leaves of *Saccharum officinarum* and in leaf sheaths of *Sorghum vulgare* (Ramk. 1928) at Coimbatore. It has also been collected from tassels of *Zea mays* at Guntur (Ramk. 1928).

Mild and moderate infestations of this thrips have been noted at Poona in the leaf sheath of *S. officinarum* and *S. vulgare* in August 1950 and April 1951 respectively.

Subfamily—Thripinae.

7. *Achaetothrips mundus* Karny (1925).

Formerly this species has been collected on wild host at Taliparamba (Karny 1925). However in Poona mild infestation on tender shoots and leaves of sweet potatoes (*Ipomoea batatas*, Fam. Convolvulaceae) has been observed in September 1950.

8. *Anaphothrips flavicinctus* Karny (1912).

Members of the family Graminae are most commonly infested by this species, however three other families of host plants also have

been previously recorded. Detailed information pertaining to them is tabulated below:—

Family of host plant	Host species	Plant part infested	Locality	Period of collection	Reference
Gramineae ...	<i>Oryza sativa</i>	Leaf-sheath	N. India	—	Shumsher 1949
	<i>Pennisetum spicatum</i>	Leaves	"	—	Shumsher 1949
	<i>Saccharum officinarum</i>	Leaf-sheath	"	—	Shumsher 1949
	<i>Sorghum vulgare</i>	Leaves	S. India	—	Shumsher 1949
	" "	Ear heads	Boilpatti	—	Ramk. 1928
	<i>Triticum aestivum</i>	Leaf-sheath	N. India	—	Shumsher 1949
	<i>Zea mays</i>	Cobs	"	—	Shumsher 1949
Lythraceae ...	<i>Lawsonia inermis</i>	Flowers	"	—	Shumsher 1949
Marantaceae..	Arrowroot	Leaves	Taliparamba	—	Ramk. 1928
Solanaceae ...	<i>Nicotiana tabacum</i>	Flowers	N. India	—	Shumsher 1949

Some of the members of the family Gramineae reported above have also been observed by us to be infested by this species. Thus, moderate infestations in the leaf sheath of *P. spicatum* have been noted in September 1950 at Viramgam and Detroj; and mild to heavy infestation on leaves and leaf sheaths of *S. vulgare* at Poona, Nasik, Anand, Baroda, Detroj and Borivali in the post-monsoon and early winter months of September, October and December 1950. The species was also present in moderate to heavy proportions on all aerial parts of *T. aestivum* in Poona, Bombay and N. Gujarat in the winter months of 1950 and 1951. The life history of this species has been worked out and is to be published separately. Few specimens have also been collected from the leaves of *Zea mays* in September 1950. It is also common on other grasses throughout the year in Poona and N. Gujarat.

In addition to the graminaceous hosts mentioned above mild infestation on the leaves of *Avena sativa* and *Echinochloa stagnina* have been observed in September 1950 at Poona. It has also been seen in mild abundance in the leaf sheaths of *Cynodon dactylon* in February 1951. The other host observed is *Eleusine coracana*, the leaves of which have shown mild abundance in September and October 1950 at Poona and Anand respectively.

As in N. India (Shumsher 1949) this thrips has been also observed on the flowers of *N. tabacum* in September 1950 at Poona, while few insects have also been collected from the leaves of *Lycopersicon esculentum* (Solanaceae) at the same place and time.

Apart from the families mentioned above a few examples of this species have been collected from the leaf sheaths of *Canna indica* (Cannaceae) and flowers of *Lagasca mollis* (Lobeliaceae) in September 1950 at Poona.

9. *Anaphothrips (Dantabahuthrips) sacchari* Shumsher (1949).

The species was described from specimens on the leaf sheaths of sugarcane (*S. officinarum*, Fam. Gramineae) at Rupar, N. India (Shumsher 1949). At Poona insignificant population has been observed on leaves of grasses, *P. spicatum* and the leaf sheath of maize (*Zea mays*) in post-monsoon months of 1950 and 1951. It has also been collected from leaf-sheaths of grasses from Baroda in October 1951.

10. *Anaphothrips (Scirtothrips) dorsalis* Hood (1919).

In India, this is probably the most important economic species of the order Thysanoptera. As a pest on chillies (*Capsicum annum*) it is known to cause the leaf curl locally known as 'Murda' disease. Its life history has been worked by Ramchandra Rao in the year 1928. In the Bombay State it is not only a serious pest on chillies but also on the newly evolved long staple varieties of cotton. The bionomics and control of this species which is under study will be published separately.

The species has been recorded in Coimbatore on shoots of *Ricinus communis* (Euphorbiaceae) on the flowers of *Poinciana pulcherrima* (Leguminosae) on *G. herbaceum* (Malvaceae), on flowers of *P. granatum* (Punicaceae) and on *Solanum melongena* (Solanaceae) Ramk. (1928).

According to our observations this thrips has got a much wider range of host plants and can be called a truly polyphagous species. In addition to the five families of host plants mentioned above it has now been collected from twelve more families.

Mild infestation has been seen on the flowers of *M. indica* (Anacardiaceae) and *C. indica* (Cannaceae) in October 1950 at Anand and Baroda respectively. The flowers of *Echinops echinatus* and *Gerbera* of the family Compositae have been found to have insignificant population in January 1950 and August 1951 respectively at Poona. In the post-monsoon months of September and October of the same year, mild infestation of the species has been observed on the flowers and leaves of *Raphanus sativus* (Crucifereae) at Anand and Poona. At the latter place a few specimens have also been collected from the leaves of *Dioscoria argeria* (Dioscoriaceae) in the same season. As reported by earlier observers (Ram. 1928) the species has been collected on *R. communis*, from Anand and Detroj from Gujarat; mild infestation was found on its flowers and leaves in December 1951. The leaves of *Setaria indica* (Gramineae) have also been found to have insignificant population in November 1950 at Poona.

In the family Leguminosae mild abundance on the flowers of *Acacia arabica*, insignificant population on the leaves of *Dolichos biflorus* and on the shoots of *Phaseolus mungo* have been noted in September 1950 at Poona. Among the different species of cotton, *G. hirsutum* has shown mild to heavy incidence on all aerial parts from August to October at Poona, Jalgaon and Surat, while the infestation was mild on *G. herbaceum* in September 1950 at Poona and in December 1951 at Anand. In the same season of 1950 the species has been mildly abundant on flowers of *Prosopis spicigera* (Mimosae), while a few specimens were also collected on flowers of *Psidium gujava* (Myrtaceae) and buckwheat at Poona. At the same place and in nearly the same season mild infestation has been noted on leaves and tender

parts of *Rosa* sp. (Rosaceae). The leaves of *Mimusops hexandra* (Sapotaceae) and *Zingiber officinale* (Zingiberaceae) have been observed to have few specimens in September and October of 1950, at Anand and Poona respectively.

In the family Solanaceae mild infestation on the flowers of *Datura metel* in July and insignificant population on the leaves of *L. esculentum* in September 1950 have existed at Poona.

11. *Ayyaria chaetophora* Karny (1926).

The species has been previously recorded on *R. communis* and garden croton (Euphorbiaceae) at Samolkot and Coimbatore (Ramk. and Marg. 1931). In Bombay State an additional host *Acalypha* sp. of the same family has been noted with mild infestation on its leaves in July 1950 at Poona. Negligible infestation on an unidentified host species locally known as *Dudhakado* was found at Pavaghadh (Gujarat) in October 1950.

The flowers of *Vigna catjang* (Leguminosae) have been mentioned as the host from Talimparamba in September 1908 (Karny 1925). The other known host of this family is *Canavalia ensiformis* from which insects were collected in 1933 by Javeri at Poona, the slide of which is in our collection.

The only other family of host plant noted is that of Amaryllidaceae a few examples on the flowers on *Hymenocallis* sp. have been collected in July 1950 from Poona.

12. *Frankliniella sulphurea* Schmutz (1913).

This insect has a wide range of host plants and is generally more abundant in flowers and causes less damage to leaves. The host plants recorded so far are listed below:—

Family of host plants	Host species	Plant part infested	Locality	Period of collection	Reference
Convolvulaceae	<i>Convolvulus</i> sp.	Flowers	Lyallpur	—	Ramk. & Marg. 1939
Cucurbitaceae ...	<i>Benincasa cerifera</i>	Leaves	„		„
	<i>Citrullus vulgaris</i>	„	„		„
	<i>Cucurbita maxima</i>	„	„		„
	<i>Luffa aegyptica</i>	Flowers	„		„
	<i>Momordica charantia</i>	„	„		„
Leguminosae ...	<i>Crotolaria juncea</i>	„	„		„
Malvaceae...	<i>Hibiscus cannabinus</i>	„	„		„
	„ <i>esculentus</i>	„	„		„
Rosaceae ...	<i>Rosa</i> sp.	„	„		„
Solanaceae	<i>Capsicum frutescens</i>	„			Ramk. 1939
	„	„	Kadiyan		Ramk. 1928

In addition to the six families of host plants stated above *F. sulphurea* has been found on fifteen other families. In October 1950 mild infestation has been observed in the flowers of *Celosia*

argentea (Amaranthaceae) at Pavaghadh and some specimens were also collected from flowers of *Nerium indicum* and *Vinca rosea* of the family Apocynaceae at Viramgam. The flowers of *Dianthus plumeri* (Caryophyllaceae) have been observed with mild intensity in April 1950 at Poona.

The flowers of five species of the family Compositae have also been observed as host plants, on all of which the infestation was of a mild nature. The collections from *Chrysanthemum* sp., *Helianthus annuus*, *tegetes erecta* were made in October 1950 at Pavaghadh, Anand and Viramgam respectively. At Poona mild infestation has been observed on *Dahlia* sp. in August 1950 and in 1951 on *Echinops echinatus*.

The flowers of *Ipomea* sp. (Convolvulaceae) have been observed to have mild infestation in November 1950 at Poona, while similar infestation was observed on the flowers of *Lagenaria siceraria* (Cucurbitaceae) in October 1950 at Pavaghadh. The flowers of *Trichosanthus alba* and *Momordica charantia* of the latter family have been observed to have mild and insignificant infestation in August and October 1950 at Poona and Anand respectively.

A few specimens of the species have also been collected from the flowers of *Geranium sanguineum* (Geraniaceae) and *Ocimum canum* (Labiatae) in October 1950 at Poona and Viramgam respectively.

In the family Leguminosae so far the insects have been observed on flowers of *C. juncea* (Ram. and Marg. 1939). The flowers of four more plants of this family have now been recorded as hosts. These are *Delonix regia* in October 1950 at Viramgam, *Dolichos lablab* in August 1951 at Poona, *Lathyrus sativus* in November 1950 at Poona and *Medicago sativa* in July 1951 at Mahableshtar. On all these except *M. sativa* the infestations have been of a mild nature while from *L. sativus* only a few specimens were collected.

Lasca mollis and *Lobelia nicotifolia* (Lobeliaceae) also have shown the presence of a few examples in October 1950 and March 1951 at Poona and Mahableshtar respectively. In addition to the two species of *Hibiscus* mentioned earlier (Ramk. and Marg. 1939), the flowers of *Hibiscus rosasinensis* have been observed with mild infestation in the month of October 1950 at Viramgam. A few individuals were noted on flowers of *H. esculentus* at Poona in July 1950. Further, scanty abundance of this thrips has been observed on flowers of *Sesamum indicum* (Fam. Pedaliaceae) in September 1950 at Poona and *Plumbago zeylanica* (Plumbaginaceae) in October 1950 at Pavaghadh.

Moderate infestation on the flowers have been observed on *Portulaca* sp. (Portulacaceae, July 1951); *Zizyphus rugosa* (Rhamnaceae) September 1950; *Citrus grandis* (Rutaceae) December 1950; *Acras sapota* (Sapotaceae) July 1950 and on *Antirrhinum* sp. (Scrophulariaceae) July 1950, all of them at Poona.

As reported earlier (Ram. 1928 and Ramk. & Marg. 1939) *C. frutescens* has also been observed as host in October 1950 at Anand, the flowers of which were infested with a few of these thrips. In addition to the said plant of the family Solanaceae the flowers of *L. esculentum* and *S. melongena* have also shown similar infestation in August 1950 at Poona. The only other family noted is Verbenaceae,

the younger leaves of *Clerodendrum phlomoides* of which have been seen with mild infestation in December 1950 at Poona.

13. *Microcephalothrips brevipalpis* Karny (1926).

This insect was originally described from specimens collected on flowers of *Chrysanthemum* (Compositae) August 1913, Coimbatore Karny (1925). It has also been collected from Coonoor on the same host (Ramk. 1928).

In addition to *Chrysanthemum* mentioned above the species has been now collected from the flowers of *Cosmos* sp., *T. erecta* and *Zinnia* sp. of the same family. The observed infestation at Poona on *Cosmos* sp. has been very little, while those on the second host moderately heavy and on *Zinnia* sp. in mild abundance. The collections from these hosts were made in September, August and July 1950 respectively.

The five other families from which this insect has been collected are Amaryllidaceae, Caryophylliaceae, Leguminosae, Lobeliaceae and Solanaceae. The host plants among these families are: *Hymenocallis* sp., *Danithus chinensis*, *Cyamopsis psoralioides*, *L. mollis* and *H. esculentum* respectively. A few specimens were collected from the flowers of the first four plants while in the case of *H. esculentum* the leaves were found to be slightly infested. The collections from these hosts were made from July to September 1950 at Poona.

14. *Scolothrips asura* Ram. and Marg. (1931).

Original record of this species was from leaves of Banana (*Musa paradisiaca*, Fam. Scitamineae) at Coimbatore (Ram. and Marg. 1931).

At Poona this species has come to our notice on the leaves of *Santalum album* (Santalaceae) in January 1951. The male of this species which has hitherto not been observed, has been collected by us the description of which will be published later.

15. *Scolothrips sexmaculatus* Pergande (1894).

This species is known to be a predator on mites on Cholam shoots (Ramk. 1928). Besides this, from Coimbatore, the species has been collected from the leaf sheaths of *S. vulgare* (Gramineae) (Pergande 1894) and the flowers of *P. granatum* (Punicaceae) (Karny 1925).

We have observed this insect as a predator on mites on chillies, *Colocasia* sp. (Araceae) and cotton. Mild population was found on the former plant in February 1952 at Poona. A few specimens also were collected from *Capsicum frutescens* (Solanaceae) and cotton in April 1951 from Poona.

16. *Thrips (Isothrips) orientalis* Bagnall (1915).

In India the species has been known from Coimbatore on flowers of *Jasminum* sp. in September 1913 and *Morinda tinctorum* Fam. Oleaceae, April 1919 (Karny 1925).

We have also observed this species in small numbers on flowers of *Jasminum* sp. in September 1950 at Poona.

17. *Thrips tabaci* Lindmen (1888).

This species is of world wide occurrence; in India the host plants recorded are *A. cepa* (Liliaceae) at Bellary (Ramk. 1928), *G. herbaceum* (Malvaceae) at Coimbatore (Karny 1925), Tea from Ooty (Ramk. and Marg. 1939) and *B. oleracea* (Cruciferae) at Bombay (Karny 1925). On the first host, namely onion, the insects are found on leaf sheaths while on cotton they have been collected on flowers and shoots.

In the Bombay State as in other places the species is a pest on onion and moderately heavy infestation has been observed in September 1950 at Poona, Anand, Detroj and Viramgam.

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